



the

DATA DOMAIN

inc.

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NEWSLETTER

An Introduction to Microcomputers

In the past several months the microcomputer marketplace has been in constant turmoil with new product introductions and announcements. Heavily advertised in magazines such as InfoWorld and Byte, a host of new computers, many made by established mainframe corporations, compete for the small business and the corporate desk-top market. Many of these machines are simply standard 8-bit CP/M micros put in a pretty cabinet with a well-known corporate logo. Others are more or less state-of-the-art 8/16 bit computers with dual processors, 5-1/4" hard disk drives, and similar enhancements. Any newcomer to the microcomputer market is faced with a bewildering variety of options, and clear guidance is hard to find.

Fortunately, there are some relatively simple guidelines for the prospective microcomputer owner. First, unless the application is exceedingly demanding of memory, such as on-line inventory control or other large data base applications requiring immediate access, the exact size of the memory and the storage available in a given computer is not likely to be a critical matter. Microcomputers with 64K of internal memory and dual disk drives with something on the order of 200K or 300K per drive are usually adequate. Even anemic disk drives such as the Osborne 1's and the Apple II's are satisfactory for many applications.

Second, satisfaction for a computer user comes primarily from the software and not the hardware, unless the machine is purchased for a very specialized scientific application. This means that shopping for microcomputers should actually be an exercise in shopping for software. Moreover, while we can be sure that the hardware now on the market will change very rapidly in the next few years as manufacturers add features and expand capacity, we can also be confident that the significant advances in software are likely to be much slower to arrive on the marketplace.

The most important software for the microcomputer is not a program that does anything useful for the user, but rather the program that manages the internal workings of the microcomputer. This program, called the operating system, determines to a great extent what application programs will be available for the computer and what other machines will be more or less compatible. Unfortunately, in the microcomputer world no standardization exists, although there are clusters around compatible operating systems. The two most significant operating systems are CP/M and Apple DOS. CP/M stands for Control Program/Microprocessor and has become a de facto standard operating system for 8-bit microcomputers that are based on the Z80 family of microprocessors. The combined number of micros using this operating system, whatever the manufacturer, is very large indeed and includes the machines of many manufacturers who also sell their own proprietary operating systems. For example, Apples can, at considerable expense, be set up to use the CP/M operating system. As a result, most business users and other general purpose micro users want to have a system that is compatible with CP/M software.

Apple DOS (Disk Operating System) is the special software that makes Apples do the things that they do. It has the virtue of being very easy to learn and use but also the limitation of a simple system with relatively little flexibility or power. Nevertheless, the very large installed base of Apple computers and their major impact on the game playing and the educational markets has made Apple DOS one of the major

standard operating systems, although it is only available on the Apple. Further complicating the scene is the fact that while most Apple II software using Apple DOS will run on Apple IIs, none of the software written for Apple III, which has its own operating system called SOS (Sophisticated Operating System), will run on the Apple II. However, because Apple can be configured with hardware and software additions to run everyone else's software and operating systems, the Apple II has remained the most flexible if not the most sophisticated microcomputer available. Unfortunately, its limited disk storage and its substandard keyboard keep the Apple from being the micro of choice for many business and general purpose applications.

There are, of course, other operating systems that currently compete in the marketplace. Manufacturers of the new 16 bit machines are currently fighting over the standard operating system that will prevail, and Radio Shack continues with its own systems as well as a modified CP/M product. In addition, there is the UCSD Pascal system, which is based on the programming language Pascal. This system has the virtue of being transportable to a wide variety of machines, both micros and superminis, but the range of software available is somewhat less than what can be found on CP/M or Apple DOS. However, for serious programmers who want to develop their own applications, the UCSD Pascal system is exceptionally convenient and efficient.

What, then, is the moral of this story? Clearly, prospective computer purchasers need to answer the following questions in order to make any intelligent decisions.

1. Will the machine be used for education and games as well as general computing tasks such as wordprocessing and financial management?
2. How much do you want to spend?

If the answer to the first question is YES, then the machine you want is an Apple II or III depending on the answer to question 2, since the Apple III is considerably more expensive than the II. If the answer to the first question is NO, then the machine you want is a CP/M based microcomputer. The one you should buy is primarily a function of your answer to question 2 and the specificity of your computing requirements. If you have very little money and general purpose computing needs, the machine of choice is probably an Osborne I which at \$1795 comes complete with an extensive software library. Somewhat more expensive machines with better screens, better keyboards, and more storage are available from Televideo among others, and these machines can cost anywhere from \$4,000 on up depending on how much mass storage is required.

The best information about microcomputers can be had from the specialty magazines such as Byte, dealers such as The Data Domain, and especially knowledgeable users. In the case of dealers and users, you need to be aware of the tendency of both to believe that whatever they have at the moment is the best of all possible machines. Many people newly interested in microcomputers fear that they will purchase a machine that next week's magazine announcements will prove obsolete. The fact is that this is absolutely certain. With the current rapid pace of change and innovation in the microcomputer business, any hardware purchased today is destined to remain state-of-the-art for no longer than a year before there is a better version, a faster version, or a version with more memory. Most of these improvements are of marginal value to the average micro user, and unless the application is very demanding of memory or computing speed, the new stuff will be practically invisible to most users. The reason to buy a micro is to use it. If you wait for the definitive hardware announcement, you will wait for at least five or ten years more.

John V. Lombardi, Editor

Ray's Remarks

Well, there isn't much I can say this issue. There are a whole lot of things happening that I can't yet talk about, and they will have to wait for the next issue. We have had several personnel changes. Bill Nixon is gone and has been replaced by Chris Brittan. Bill Doner is doing an excellent job as purchasing agent. I've tried to get a resume from them, but they just don't appreciate how important it is to get one in this Newsletter, so our deadline has arrived without anything else to tell you about them. Next issue we'll have three or four more people to feature.

We have a lot of useful stuff around The Data Domain that some of you must want, if the price is right. In particular, we have a dozen or more 16K static memory boards. These are 250 ns, bank switchable, S-100 boards by Seattle or IMS. We also have about 5 or 6 Microbyte 32K static ram boards, also bank switchable. The 16Ks can be had for \$125 or 2 for \$200. The 32Ks are \$200 or 2 for \$350. They're out of Alpha Microsystems computers and are good, reliable, fast, and versatile. We have a bunch of Cromemco software, mostly on 5" diskette, including 16K Extended Basic, Ratfor, and the like. These are not the latest release, but they are offered at their original prices or less, and they can be registered which makes them updateable. We have several other things that may be of interest to you tinkers. Examples are Persci 277 disk drives, a few Shugart 400s, three Wangcos, and similar hardware. We have printers, cheap! and a bunch of other stuff, both hardware and software.

We have all the basic ingredients of an Alpha Micro Systems computer. This is currently the most mature 16 bit micro on the market. It is a true multi-user, multi-tasking machine, and it can routinely handle megabytes of memory, floppy disks, cartridge disks, Winchester disks, multiple terminals, and multiple printers. Call me if you are interested in any of this stuff.

Ray Borrell

From the Apple Pit

Well, yours truly is writing this Apple Pit on the road during an all-too-brief respite and vacation. This edition is arriving from Montgomery, Alabama, a location not exactly famous as the Silicon Valley of the South. In fact, my last trip in this direction last year disclosed a nightmare: An Apple Dealer closing up shop and going out of business. He claimed to have sold only two Apples that year (I immediately concluded that he kept the store open only two days that year). I am happy to report that things are looking up this year with two Apple dealers in town. One is very new, in fact I was in the store when a representative of the Montgomery School Board entered the store to inquire about a system of 6 to 8 Apples connected together for a classroom environment. The salesman in the store had not heard of the Corvus Constellation or OmniNet. That boggled my mind, so I explained the possibilities to them. (Ray: I left a Data Domain business card with them, so if you get a phone call from Montgomery, Ala-----).

There are all kinds of new Apple goodies available since the last Apple Pit. The Apple-Card is available -- a Z-80 plus 64K of Ram with either a 4 Mhz or 6 Mhz clock. This card has all kinds of possibilities: like perhaps using the remaining Apple ram as a printer buffer, ---? We will follow up on this after some hands-on experience. This year is going to see the blossoming of the 1200 baud modem. The prices are starting to tumble into the \$500 to \$600 range now for 212A capability. D.C. Hayes, Novation, and a number of others are all climbing aboard the bandwagon. Must be that other people are seeing long distance phone bills like mine. M.P.C. has announced a 128K bubble memory board for the Apple. Although the device is not quite as fast as the RamCard disk emulators (3 X faster than a floppy vs. nearly 10 X faster for the RamCards), it is non-volatile. Yep, that's almost like 128K of eeprom sitting there in your Apple. It's there when you power up, but you can change it. Now if that doesn't have the developers of turnkey systems doing handstands I don't know what it takes.

If you have dialed up the IndianAppleUs Bulletin Board System in the last three weeks (at 812-334-5455, evenings 5:00 pm to 7:00 am and week-ends) you have noticed some changes in the system. The board now supports 40 to 80 column display with upper/lower case and has a streamlined log-on procedure for validated users. If you don't have a modem now, borrow one, try the system, then come to The Data Domain and get one.

The LOGO language has been receiving a lot of attention lately. In fact the August Issue of BYTE is devoted to the subject. IndianAppleUs is right in step. The August 11th meeting will feature reviews and comparisons of the Krell LOGO and Apple LOGO packages. The meeting will be, as usual, at 7:30 pm at The Data Domain.

John Prather

The Zenith Data Terminal: A Best Buy

Although microcomputers are wonderfully useful machines, there are often tasks that exceed their capacity. Many people need the large memory, the very high speed, or the specialized languages available only on mainframe computers. Students frequently take classes that involve them in activities on the main frame. And businesses may need the information available from a large computer information services such as provided by Dow Jones or Readers Digest. To access these big machines, from the superminis by DEC and Prime to the mainframes such as the CDC at IU or the timesharing services of The Source, you need a terminal and the associated hardware to connect to the telephone line and ultimately the host computer.

Until very recently, a good terminal such as a Televideo and the modem device to communicate over the phone lines would cost together anywhere from \$800 to \$1,000 or more depending on how fancy the terminal and how fast the modem device. Now, Zenith has introduced a smart terminal and modem package for \$695 that has a host of impressive features normally not available on standard data terminals and modems.

This is a two-piece unit with a detachable keyboard. The monitor, a Zenith green screen, provides a clear sharp image with text in 80 columns by 24 lines. The terminal has programs that permit automatic log on and off, automatic submission of passwords, and automatic copy to a printer. It has a parallel, Centronics type, printer interface as standard equipment, and the terminal can be used to transfer information from the host to the printer very efficiently. When disconnected from the host, this terminal can be used as an electronic typewriter, permitting you to compose lines on the screen and then send them to the printer as they are completed. The terminal has a host of other features as well that make the operation of a remote station convenient. When packaged with an inexpensive dot-matrix printer it is possible to get the smart terminal and a printer that will work with it for about \$1,000 to \$1,200, what many terminal-modem combinations without a printer cost. That is why we rate this as a Data Domain Best Buy.

Low Cost Letterquality Printer from Smith Corona

As the prices for quality printers drop, all of us have been waiting for the inexpensive letter quality printers to appear. The first one to hit the market is from SCM. The Smith Corona daisywheel printer is a compact and sturdy unit that sells for under \$900. While it has none of the fancy features of the much more expensive Diablo/Qume printers, it does do the main job well. It will print text from a wordprocessing program clearly and precisely, just like a quality typewriter. There are still only a few different daisywheels available for this printer, but undoubtedly more are coming. The printer accepts input from a standard, Centronics type parallel interface or it can be ordered with a serial interface. This printer, in combination with the Osborne 1, provides a superior value in quality wordprocessing at a bargain price.

Listen to Your Apple Talk

The customers and staff of The Data Domain have been seen and heard recently playing with a new speech synthesizer available at the store. The Type'n'Talk from Votrax is a small unit that connects to your Apple or other computer through any RS-232 serial interface and can be programmed in Basic or Pascal to talk back. The techniques used in the unit are discussed more fully in the manual and in an interesting article in the May 1982 Softalk magazine, but the essence is that you send the unit some words and it says them back on command. Although the result, when played through a speaker or headphones, is not exactly like what Aunt Louise would sound like, it is perfectly intelligible. There are techniques discussed in the manual for instructing the machine to pronounce those English words that defy all pronunciation rules.

The uses for such a device are many, including education, instruction for the handicapped, industrial uses, and, of course, hobbyist experimentation. Imagine the haunted house that could be designed with this unit available to produce spooky pronouncements of various kinds. The unit has considerable capacity and can produce something on the order of 2,000 seconds of speech without going to the disk for more information. If pauses for disk access are acceptable, then the machine can talk virtually forever. Mercifully, it can be turned off if you don't like what's being said. The unit sells for under \$375.

The Cheap Modem

For those who need an inexpensive modem to permit their Apple or other microcomputer to talk to other computers the Signalmaster Mark I will fit the bill. This device is a complete 300 baud, direct connect modem that requires only an RS-232 interface to work with any computer. It is battery powered or it can run on a simple AC adapter. The modem has no intelligence, but for many applications a smart modem is not necessary. This small unit sells for only \$99 at The Data Domain.

New Look for Osborne I

The Osborne I, one of the most successful microcomputers in recent years, has now acquired a new look. Gone is the battleship black and cream colored case, and in its place is a new, higher quality plastic case in light blue. The machine, however, is still the same best buy that has kept Osborne I's moving out of The Data Domain with a constant stream of satisfied customers. The software base available in Osborne I compatible format continues to expand, and the promised improvement in disk density, while delayed, will certainly increase the utility of this remarkable machine.

CP/M Software Classics: WordStar, MailMerge, DataStar, SuperSort

Although it has become almost a cliché to refer to MicroPro's WordStar program as the standard for microcomputer wordprocessing, that is, in fact, the case. One only has to read the many ads that compare competing systems to the many capabilities of WordStar to confirm the preeminent position of this outstanding program. WordStar, for those few uninitiated into the traditions of the microcomputer world, is an on-screen, wordprocessing and formatting program. It is designed to work on microcomputers running the CP/M operating system and it enjoys very widespread acceptance in business, academic, and home environments. Part of its appeal is that the program is very stable and works just exactly as the manual and the on-screen instructions say it will. The program is exceedingly flexible and can be relatively easily adapted to practically any microcomputing environment using CP/M. This wordprocessor belongs to the what-you-see-is-what-you-get variety, with each paragraph being formatted on screen as you type. Margins, justification, and an incredible variety of special printing options are all accessible through this program.

WordStar is also an excellent choice as a wordprocessor because it can be used in conjunction with a whole family of products that share files including mailing labels, form letters, data processing files and the like. One of these is MailMerge from MicroPro that when operated in conjunction with WordStar offers outstanding flexibility in form letter and list processing management. Many people buy the WordStar and MailMerge packages together because it seems foolish to attempt quality office automation using WordStar without the features of MailMerge. However, because some users often have no need for list processing or form letter management, it is possible to acquire WordStar without the MailMerge features.

SuperSort and DataStar, also from MicroPro, together constitute a powerful data management system. DataStar, it must be emphasized, is not a database system but a file or record manager, albeit a very complex and powerful one. Its primary purpose is the organization of large numbers of records or forms of information. The maximum size of a file is limited only by the amount of space on one disk and the maximum size of a record can be as large as over 4000 characters. In addition to an impressive number of ways of designing forms and setting up the system to prevent entry errors or make data entry easy, this system also has a significant number of retrieval options. It does not, however, have any report writing capability with the exception of listing the data file in a variety of formats. When combined with SuperSort, the two programs can manipulate the data in a file in practically any way imaginable.

SuperSort is a sort/merge program for microcomputers that rivals the mainframe programs for the same purpose. It is highly adaptable both in the kind of files and records it will handle as well as in the flexibility of its sorting routines. It is limited only by the size of a file that can fit on a single disk. This program, when combined with DataStar offers outstanding sorting, rearranging, and selecting capabilities. It can also be used for certain reformatting tasks with data files that need to be transformed from one format to another.

These programs are available at The Data Domain for 8" CP/M disks and a range of 5-1/4" formats such as those used by Osborne, Apple, or Televideo. The price of these items varies depending on the format and version but WordStar runs under \$400, and SuperSort and DataStar are in the \$200 range.

A Note on Disk Incompatibility

This Newsletter and other microcomputer publications, constantly refer to disk formats. Many new users are confused by this terminology because all those mini-floppy disks look pretty much alike. Unfortunately for us, there is virtually no standardization in the realm of microcomputer diskette formats. Diskettes come in two main sizes: 8" and 5-1/4". While 8" disks are relatively well known in business and some wordprocessing environments, the current trend is towards better and better 5-1/4" drives that put more and more information on one small disk. Each disk drive and computer manufacturer has invented a system for putting information on the disks, and these systems are different enough that the disks written on an Apple II, for example, can not be read by an Osborne I, even though they are the same size. Data can be coded differently as it is put on the disk, it can be recorded in single, double or other density, or it can be recorded on one side or both sides of the disk. Most of these formats are incompatible with each other.

Software companies that produce programs to run in the CP/M environment provide their programs recorded on disks in the proper formats for the major computer brands. But it is important to check to make sure. There are some exceptions, either when the software company doesn't want to bother with implementing their program on another machine or when the capacity of a manufacturer's disk drive is insufficient for a program originally written to run with another company's disk drive. Hence, before becoming too enamored of a particular software package, be sure to check to see if there is a version of that software that comes on disks that can be read by your computer. Although there has been some discussion of making it possible for one computer to read many different disk formats, so far not much has been done.

PIE Writer and Screen Writer II: An Update

Two of the most popular Apple II wordprocessing programs, PIE+Format and Super Scribe II have been reissued in revised and improved versions. PIE+Format, originally published by the now defunct Programma company, is now called PIE Writer and has been reissued with a new manual and a number of improvements and enhancements. The manual is much superior to the previous one in that it can be read and understood without major effort. The program itself is mostly the same except that it is now possible to enter control characters into the file and have the resulting text properly justified. This permits the use of superscripts and subscripts as well as accents and strikeouts. The program comes in versions to match the type of Apple screen display in use. There is a standard 40-column version and versions with screen drivers written especially for the major Apple compatible 80-column cards.

The strength of this program is its superior editor and efficient and predictable formatter. The editor is very fast and efficient and permits a wide range of Apple editing on programs, text files, and other material with a minimum of fuss and a maximum of usability. Its only limitation is on file size which cannot exceed about 22K. The program, of course, has facilities for chaining files so that is relatively easy to prepare very long documents in modest 11 or 12 page segments.

Super Scribe II was one of the best sellers for some time in Apple wordprocessing. The program is exceedingly powerful in its formatting attributes and reasonably fast and efficient with its editing program. The new version, called Screen Writer II, works virtually the same as the previous version, but a number of serious bugs have been fixed. In addition, the manual, which was not very good, has been completely rewritten and improved. The biggest drawback of this program is that users need to pay very close attention to the way in which they handle their disk files when editing and saving material. If they do it incorrectly, the consequences can be garbled files. The manual is now clear and explicit about what has to be done to prevent disaster, but there is still ample opportunity for absent minded error.

Screen Writer requires no hardware to achieve upper/lower case on the Apple screen and has a 70 column mode that is quite useful. Moreover, this program has a very advanced set of printing options that permit

sophisticated document preparation. Although in theory the program can handle files up to 65K, in practice the manual recommends keeping the files short, about 7 to 12K in order to reduce the chances of garbled files in storage and manipulation. The Screen Writer program will make use of a RAM card to either expand the amount of in-memory text or permit both the editor and the formatter to be in memory at the same time. This makes movement back and forth between editor and formatter fast and easy and allows corrections and test printings to the screen to be done rapidly.

Screen Writer also has a convenient keyboard macro capability that facilitates the entry of repetitive phrases or special control character sequences. There are a host of other features, and those with complex wordprocessing needs who do not want to spend the substantial extra money for WordStar and the associated hardware to run it on the Apple, should check this program over very carefully. Both of these improved programs sell for about \$150, and are both excellent buys at The Data Domain.

Powerline Protection for Microcomputer Equipment

As more microcomputers become part of home and office, the danger of powerline problems increase. Most home computer owners think of the electricity coming into their homes as safe, reliable, and immutable. Of course, Bloomingtonians know that power outages are a frequent consequence of spring and summer thunderstorms but often do not relate these phenomena to their computer. Picture, then, the dismay on finding the cherished family Apple a smoking ruin after a power surge resulting from a lightning strike on the power lines somewhere in the Bloomington area. Even in calm weather, the power delivered to homes and offices, while stable enough for crude machines like typewriters and electric fans, often has irregularities sufficient to cause data loss and disk drive problems, if not damage to the computer itself.

Fortunately, there are some relatively inexpensive solutions to this problem. Dymarc Industries makes a line of surge protected electrical outlet strips that can protect your machine from all but the most catastrophic lightning strike. The Clipstrip power strips typically have six switched, fused, and protected grounded outlets. There is both a fuse and a surge protection device that will blow in the case of a major surge and will suppress the peaks of less significant power line variations. For the technically inclined it may be useful to know that these units clamp the incoming A.C. line voltage to a maximum of 135 volts in less than 10 nanoseconds. These units have varying prices depending on the number of outlets and the sophistication of the protection provided. A 12", six outlet Clipstrip with the basic protection, a six-bio fuse, a 9' cord, and a lighted switch will run about \$99 at The Data Domain.

The Game Report

From time to time in the Newsletter, we like to report on especially interesting games for the Apple. Our choices are completely subjective and reflect the taste and games experience of the editor's two children, ages 10 and 13. In recent memory, which in the game business for children is a period of perhaps three months, the favorite is Wizardry. This game is of the adventure variety rather than the bang-crash shoot-em-up style. It demands dedication, enormous amounts of time, and considerable expertise. It is totally destructive of good study habits during school and should be restricted to vacation time. Mostly it seems to appeal to those infected with the Dungeons and Dragons role-playing games. The basic game comes with one scenario or situation, but the clever publishers have now come forth with a new and more complex scenario that all original purchasers of the game will surely want to buy. It is reliably reported that a level-13 character is required from the first scenario in order to stay alive in the second, but I'm not sure I understood the report.

More intelligible, but noisier, are ChopLifter and StarBlazer. The first is a shoot and rescue game in which an extremely life-like helicopter must be taken through excruciating danger in order to rescue deserving folk. Even if the rescue is successful, however, the dangers of the return trip are made even more harrowing by the knowledge that any miscue results in the immediate death of copter pilot and all the desperate passengers. Fortunately, like most video games, immediate rebirth is programmed in, and you can try again with only the most fleeting remorse.

StarBlazer, is more straightforward in its approach to destruction, although the targets are mostly inanimate. This game involves a rocket plane that at high altitude can shoot its attacking enemies and at low altitude can bomb its targets. However, it can also run into ground objects and disappear or it can be shot down by higher flying enemies. Much excitement here and lots of variation in difficulty of play. This, like ChopLifter, works best with a joystick.

A game with a socially redeeming purpose is MasterType which, in the course of a relatively standard shoot-em-up game, attempts to teach the player how to type. The enemies in this game are letters, groups of letters, and words. The object is to type the letters correctly and fast so that they can be prevented from sending their destructive machines against your spaceship. If you put your fingers where they belong on the keys and follow the instructions about typing, you can get the best score and win against the words. Of course, it is possible to cheat by looking or using the wrong fingers, but only good touch typists can survive at the highest levels of this game. There is also a provision for creating your own set of words or letter groups. Of all the typing teachers, this seems to be the most entertaining.

The Data Domain Sale of the Month

1. 6 Commodore VIC-20s. List price of \$299 each. While they last **250**.
 2. Apple II Special good through September 15, 1982. At **\$1995**, the package is a full 25% off list price. They've been selling like hotcakes.
 3. Osborne 1, SCM TP-1 w/cable. List price of \$2750. Through September 15th, these sell for **\$2500**.
 4. WordStar, MailMerge, SpellStar and Z-Card! All for only \$600 until September 15th.
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